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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,748	04/18/2005	Christian Schlummer	SCHLUMMER-2	6071

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EXAMINER

LEYSON, JOSEPH S

ART UNIT	PAPER NUMBER
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1722

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/531,748	Applicant(s) SCHLUMMER, CHRISTIAN	
	Examiner Joseph Leyson	Art Unit 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. All previous objections and/or rejections are withdrawn in view of Applicant's response filed on October 16, 2006, if NOT restated below.
2. It is noted that the Remarks filed on October 16, 2006 refer to a new claim 32. However, new claim 32 was NOT included in Applicant's response filed on October 16, 2006.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 31 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 31 recites that the mixing elements are of suitable length, so that upon rotation of the screw piston, the melt is thoroughly mixed within the cylinder by the mixing elements. However, the disclosure as originally filed does not disclose such a suitable length.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 18, 20-23 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/055282 in view of Ishibashi et al. (U.S. Patent 3,902,704).

WO 02/055282 disclose a device for an injection molding machine 1 for the production of foamed plastic molded parts by an injection method utilizing a blowing agent including a screw piston 3 supported in an injection cylinder 2 of an injection molding machine 1 defined by a draw-in zone L1, a compression zone L2 and a metering zone L3, wherein a diameter of the screw piston 3 downstream following the metering zone L3 is less than a diameter of the piston in the metering zone L3 (i.e. see smaller diameter zone L4), a mixing element (pin nozzle) 10 having a permeable portion 5 (note that element 10 is permeable by having a permeable portion defined by opening 5 and allowing blowing agent to flow therethrough) extending from the screw piston 3 circumferentially, the mixing element 10 is loaded with blowing agent via bore 6, wherein the mixing element discharges the blowing agent into a plasticizing melt in the cylinder 2 through the permeable portion 5 into a defined location (i.e., p. 11, line 6, to p. 12, line 3), wherein the area L4 of reduced piston diameter is proximate the metering zone L3, and a blowing agent input unit 12 for supplying blowing agent to an interior of the screw piston 3. The mixing element 10 is constructed as a rotation-symmetrical pin (i.e., fig. 2). However, WO 02/055282 does not disclose a plurality of mixing elements spaced apart in the area of the reduced piston diameter.

Ishibashi et al. (U.S. Patent 3,902,704) discloses a device for production of foamed plastic including a screw 1 having a zone (area) 2 with a reduced screw diameter proximate a metering zone (i.e., the portion of the screw 1 immediately upstream of zone 2; figs. 1-3), and mixing elements (nozzles) 3 having permeable portions (i.e., defined by the openings in nozzles 3) extending from the screw 1 circumferentially and spaced apart in the area 2 of the reduced screw diameter (which creates a zone 2 of low pressure), wherein the mixing elements 3 discharge a blowing agent into a plasticized melt through the permeable portions into defined locations proximate the metering zone. The arrangement of the mixing elements in the area of reduced diameter (or low pressure) enables thorough mixing and dispersing of the blowing agent into the plasticized melt with rotation of the screw (i.e., col. 2, line 51, to col. 4, line 50). The mixing elements 3 are of suitable length, so that upon rotation of the screw, the melt is thoroughly mixed by the mixing elements (i.e., col. 3, lines 3-21; col. 4, lines 20-27). The mixing elements 3 are constructed as a rotation-symmetrical pins (i.e., figs. 1, 3, 6, 8 and 9). The mixing elements 3 are provided with a means for connecting with the screw including a threaded bore (i.e., col. 3, lines 22-25; fig. 6). The mixing elements can be provided with cylinders of varying diameters defining a stepped portion (i.e., fig. 8).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the device of WO 02/055282 with mixing elements in the area of the reduced piston diameter as disclosed by Ishibashi et al. (U.S. Patent 3,902,704) because such a modification would enable thorough mixing and dispersing

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of blowing agent into the plasticized melt with rotation of the screw piston. As to the mixing elements having different shapes, such as being configured as a cone, a truncated cone, a straight prism or an angular prism, or being configured with a rhomb-shaped or rectangular cross section, it would have been obvious to an artisan of ordinary skill at the time of the invention that the mixing elements could have different shapes as long as the mixing elements function as before, see *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). Furthermore, note that Ishibashi et al. (U.S. Patent 3,902,704) disclose that the mixing elements can have different shapes (i.e., compare figs. 6 and 8) and disclose that the mixing elements can be either vertical or inclined (i.e., col. 3, lines 47-51).

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/055282 in view of Ishibashi et al. (U.S. Patent 3,902,704) as applied to claims 18, 20-23 and 26-31 above, and further in view of Taylor (U.S. Patent 3,972,970).

Taylor (U.S. Patent 3,972,970) discloses a device for the production of foamed plastic including a nozzle 25 for loading blowing agent to molten plastics. The nozzle 25 is formed of sintered metal or ceramic (i.e., col. 6, lines 3-19) to allow the passage of blowing agent while preventing the passage of molten plastics.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the mixing elements (which are also blowing agent nozzles as mentioned above) to be formed of sintered metal or ceramic because such a modification would allow the passage of blowing agent through the mixing

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elements (or nozzles) while preventing the passage of molten plastics as disclosed by Taylor (U.S. Patent 3,972,970).

8. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/055282 in view of Ishibashi et al. (U.S. Patent 3,902,704) as applied to claims 18, 20-23 and 26-31 above, and further in view of Taylor (U.S. Patent 3,972,970) above, and further in view of Kudert et al. (U.S. Patent 5,975,871).

Kudert et al. (U.S. Patent 5,975,871) disclose seats 598 for copper o-rings 597 for preventing leaking of molten plastics between assembled parts.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the apparatus with seats and copper o-rings because such means are well known in the molten plastics processing arts for preventing leaks of molten plastics between assembled parts as disclosed by Kudert et al. (U.S. Patent 5,975,871).

Response to Arguments

9. Applicant's arguments with respect to the instant claims have been considered but are moot in view of the new ground(s) of rejection.

It should be noted that Shimura et al. (U.S. Patent 6,652,254) is the English equivalent of WO 02/055282. Applicant argues that Shimura et al. shows an opening 5 which is not a mixing element since it is merely the pipe extending perpendicular to the screw with a pin nozzle for squirting the agent into the cylinder, that the pin nozzle end is shorter than the screw flight and therefore has no mixing capacity, that this pin nozzle is not a mixing element, and that the Examiner's proposal that the nozzle enables

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mixing is plainly wrong, because its shortness relative to the screw flight renders it devoid of any mixing capacity. The Examiner respectfully disagrees. The pin nozzle 10 of Shimura et al. and of WO 02/055282 projects from the screw (i.e., fig. 2; col. 6, lines 61-64, of Shimura et al.) and thus definitely has mixing capacity due to rotation of the screw.

Applicant argues that Shimura et al. does not show any "permeable portions", that they are simply openings that are controlled by valves such that the valves are either open or closed, that permeability implies a barrier, filter or similar across which material can flow. The examiner respectfully disagrees. It is noted that the original specification gives no special definition for "permeable", and thus it was given it broadest reasonable interpretation. WordNet (see webpage citation) defines "permeable" as allowing fluids or gases to pass through. Thus, openings, which allow passage of fluids or gases therethrough, are permeable.

Applicant argues that the Taylor reference shows that sintered or ceramic material can be used for release of the blowing agent, and that the Examiner has failed to demonstrate any motivation or suggestion how this feature could in any way be combined with a Shimura pin nozzle or a Hendry check valve plug. The examiner respectfully disagrees. The motivation or suggestion is clear from the prior art rejection above. The mixing elements are not just mixing elements because they also are blowing agent nozzles (i.e., means for supplying blowing agent to the melt). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the mixing elements (which are also blowing agent nozzles as

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mentioned above) to be formed of sintered metal or ceramic because such a modification would allow the passage of blowing agent through the mixing elements (or nozzles) while preventing the passage of molten plastics as disclosed by Taylor (U.S. Patent 3,972,970).

Applicant argues that none of the references discloses a device having mixing elements with permeable portions that are circumferentially spaced at the screw piston. However, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The prior art rejections above make obvious a device having mixing elements with permeable portions that are circumferentially spaced at the screw piston.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Leyson whose telephone number is (571) 272-5061. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gupta Yogendra can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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3/5/07